

Progression documents

Subject: Scientific Enquiry

	Prediction	Conclusion	Recording and Presenting Data	Experimental Skills	Enquiring skills	Working scientifically statements.	Types of enquiry to be studied
Year R	<ul style="list-style-type: none"> - They answer 'how' and 'why' questions about their experiences and in response to events. 	<ul style="list-style-type: none"> - They develop their own narratives and explanations by connecting ideas or events. - Recount experiences and use a range of vocabulary. - Talk about properties (e.g. of materials) - They make observations of animals and plants and explain why some things occur, and talk about changes. 	<ul style="list-style-type: none"> - They handle equipment and tools effectively. 	<ul style="list-style-type: none"> - Respond to what they hear with relevant comments, questions or actions. - Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. - They safely use and explore a variety of materials, tools and techniques. 			<ul style="list-style-type: none"> - Comparing differences and changes. - Describing the effect of changing things. - Begin to

Assessment Points

Rotation A Assessment Point	Rotation B Assessment Point	Assessment Point in Both Rotations	Long Term Study Assessment Point
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Year 1	<p>Key skill:</p> <ul style="list-style-type: none"> - Talk about what you think might happen. 	<p>Key skill:</p> <ul style="list-style-type: none"> - asking simple questions and recognising that they can be answered in different ways. - using their observations and ideas to suggest answers to questions. - Take into account others' ideas/ observations - Explain how they identified/grouped 	<p>Key skill:</p> <p>In line with Maths skills.</p> <ul style="list-style-type: none"> - With support, record in tables and graphs - with guidance, begin to notice patterns and skills 	<p>Key skill:</p> <p>In line with Maths skills.</p> <ul style="list-style-type: none"> - observe closely, using simple equipment (e.g. hand lenses, egg timers) - identifying and classifying - Use simple features to compare objects, materials and living things. 	<p>Key skill:</p> <ul style="list-style-type: none"> - perform simple tests. - Begin to carry out enquiries over extended periods of time. - Understand how a question has been presented on a fair test planner. -begin to answer questions about their local habitat. 	<ul style="list-style-type: none"> - Gather evidence to describe the differences and similarities between different organisms, habitats and objects. - Gather evidence to describe how things change over time or as a result of something happening (e.g. how some things spring back when bent and others do not, or plants wilt when they are not watered). 	<ul style="list-style-type: none"> - Comparing differences and changes. - Describing in order to classify. - Surveys to identify patterns and support classification. - Describing the effect of changing things. - Using secondary sources, including the internet and experts.
Year 2	<p>Key skill:</p> <ul style="list-style-type: none"> - use given scientific knowledge to predict what might happen in cause and effect experiment. 	<p>Key skill:</p> <ul style="list-style-type: none"> - with guidance, begin to notice patterns and skills - Begin to use gathered data in order to draw conclusions 	<p>Key skill:</p> <p>In line with Maths skills.</p> <ul style="list-style-type: none"> - gather and record data to help in answering questions. - Notice patterns and skills - Construct simple food chains - Begin to present data independently 	<p>Key skill:</p> <ul style="list-style-type: none"> - Observe changes over time. - Carry out comparative tests 	<p>Key skill:</p> <ul style="list-style-type: none"> - Discuss different ways of answering questions. - Begin to raise and answer questions about their local habitat. - Begin to carry out enquiries over extended periods of time. - Begin to use a fair test planner with support. 	<ul style="list-style-type: none"> - Begin to gather evidence to describe the relationship between variables and patterns (cause and effect), by identifying and seeking to quantify what must be changed and what measured (what change and what measure). 	<ul style="list-style-type: none"> - Pupils begin to look for relationships between variables (patterns). * Begin to ask scientific questions framed in the above.

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Year 3 and Year 4	<p>Key skill:</p> <ul style="list-style-type: none"> - Make predictions from gathered data or experiences (to answer a further question). - Ask relevant scientific questions. - Use relevant scientific language when predicting. - Begin to think about what the final data might look like (through prediction graphs). - Predict from simple cause-effect questions. - Predict how a change may affect an outcome (e.g. removal of a food from a habitat). 	<p>Key skill:</p> <ul style="list-style-type: none"> - Report on findings from enquiries. - Draw simple conclusions linking knowledge to the data gathered. - Suggest improvements to experiments. - With support, raise further questions. - With help, look for changes, patterns, similarities and differences in their data. - Begin to discuss whether the results of an enquiry were what was expected. 	<p>Key skill:</p> <p>In line with maths skills.</p> <ul style="list-style-type: none"> - Present data in a variety of ways (graphs, charts, tables, diagrams). - Record findings using simple scientific language. - Make independent decisions about how to record and analyse the data. - Group, sort and classify using specific criteria. 	<p>Key skill:</p> <ul style="list-style-type: none"> - Use systematic and careful observation. - Take accurate measurements using standard measures. - Use a wide range of equipment (inc. thermometers, force metres & data loggers.) - Use ever increasing sophisticated classification charts, flowcharts to group or classify. - Collect data from their own observations and measurements (using notes, simple tables and standard units). 	<p>Key skill:</p> <ul style="list-style-type: none"> - Ask relevant scientific questions to answer. - Use different types of scientific enquiry (Simple enquiries/comparative tests) - Recognise when a simple fair test is necessary and help decide how to set it up. - Make decisions on what observations to make/measurements to take; how long to make them for; and what simple equipment might be used (Yr3 with support). - Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. - Raise and answer questions about their local habitat. -independently complete fair test planner. 	<ul style="list-style-type: none"> - Recognise that factors other than that we are changing may have an effect and seek to control these factors (what change and what measure and what keep same). - Gather evidence to describe and classify patterns of behaviour, characteristics and properties of materials, and make generalisations from data samples. 	<ul style="list-style-type: none"> - Pupils become confident in identifying relationships between variables (patterns). * Ask scientific questions framed in the above.

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Year 5 and Year 6	<p>Key skill:</p> <ul style="list-style-type: none"> - Use test results to make predictions to set up further comparative and fair tests. - recognise which secondary sources (books, technology and other peoples' data) will be most useful to research their ideas. - Predict the expected outcome of data in greater detail (prediction graphs). - begin to separate opinion (based on their own thoughts) from scientific fact (based on learnt knowledge). - use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. 	<p>Key skill:</p> <ul style="list-style-type: none"> - report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results. - identify scientific evidence that has been used to support or refute ideas or arguments. (Both with own results and those given). - Use results to identify when further tests and observations might be needed. - begin to separate opinion from fact. - use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. 	<p>Key skill:</p> <ul style="list-style-type: none"> - Record data and results of increasing complexity. - Use a wide range of recording methods (choosing the most appropriate). - Identify different causal relationships in data and identify evidence that supports/refuted their ideas. 	<p>Key skill:</p> <ul style="list-style-type: none"> - with increasing accuracy and precision, take measurements using a range of scientific equipment. - With guidance (yr5) and then independently (yr6), take repeat readings when appropriate. - make their own decisions about what observations to make, what measurements to use and how long to make them for. - choose the most appropriate equipment to make measurements and explain how to use it accurately. 	<p>Key skill:</p> <ul style="list-style-type: none"> - plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - Choose the most appropriate type of scientific enquiry (comparative, causal etc). - Complete all of a fair test planner with consideration of other enquiry skills. - Explain which variables need controlling and why; and which will be easy/challenging to control. - recognise which secondary sources will be most useful to research their ideas. 	<ul style="list-style-type: none"> - Recognise that conclusions may be uncertain due to difficulties controlling and measuring variables accurately and that measurement always introduces some error. Understand that repeating experiments helps to identify what the true value is and that data points far from the mean are likely to be inaccurate and should be discounted when averaging. - Adapting experiments to produce more precise conclusions when the question requires it, especially when seeking to find maximum, minimum or specific values. 	<ul style="list-style-type: none"> - Pupils explore more complex relationships or questions requiring greater precision; this will often require the identification of important values (eg biggest, smallest, optimum). * Ask scientific questions framed in the above.

